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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/084,485

Applicant(s)

NAKAJIMA, TOMOHIRO

Examiner

Heather D. Gibbs

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-130 is/are pending in the application.
- 4a) Of the above claim(s) 92-130 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 02/28/2002+.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 92-130 are withdrawn from further consideration. Applicant timely traversed the restriction (election) requirement in the reply filed on December 18, 2006. Upon applicant's argument, Examiner has added claims 49-59,71-91 to the elected Group I. Claims 92-130 are drawn to a system in which "an electrostatic image is formed on an image holding body by dividing and image region thereon in the primary scanning direction of each of said optical scanning modules and is made visible by toner to be transferred onto an output sheet of paper." For this reason, these claims stand restricted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1- 3, 8,37-39,44,60,71,81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) in view of Shimada et al (US 4,760,251).

Sonehara discloses an optical scanning module comprising: a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

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Sonehara does not disclose expressly wherein a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning portion of each pixels.

Shimada discloses a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning portion of each pixels (Col 7 Lines 3-Col 8 Line 27).

Sonehara & Shimada are combinable because they are from the same field of endeavor, optical scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Shimada with Sonehara.

The suggestion/motivation for doing so would have been to correct image-scanning frequency, as taught by Shimada.

Therefore, it would have been obvious to combine Shimada with Sonehara to obtain the invention as specified in claim 1.

For claim 2, Shimada teaches The optical scanning module as claimed in claim 1, further comprising a detection part that detects a displacement of said movable mirror, wherein a frequency modulation section is set to start after a given period of time passes since a detection signal is obtained from said detection part; and a frequency causing said light-emission source to emit light is varied within the frequency modulation section (Col 8 Lines 19-27).

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For claim 3, Shimada teaches The optical scanning module as claimed in claim 2, wherein a start timing of the frequency modulation section is varied based on the detection signal obtained from said detection part (Col 8 Lines 28-38).

For claim 8, Sonehara teaches a detection part that detects a displacement of said movable mirror (Col 8 Lines 19-27); and Shimada teaches a variable output setting part that sets a frequency variation section so that the frequency variation section starts after a given period of time passes since a detection signal is obtained from said detection part, and varies a light-emission output of said light-emission source in accordance with the primary scanning position (Col 7 Lines 3-Col 8 Line 27).

For claim 37, Sonehara teaches a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

Sonehara does not expressly disclose wherein a light emission period forming one pixel on a scanned surface is varied with respect to a primary scanning direction to be minimized in a vicinity of a center of an image so that a light- emission interval between each of pixels forming pixel information is minimized in the vicinity of the center of the image.

Shimada teaches wherein a light emission period forming one pixel on a scanned surface is varied with respect to a primary scanning direction to be minimized in a vicinity of a center of an image so that a light- emission interval between each of pixels

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forming pixel information is minimized in the vicinity of the center of the image (Col 7 Line 3-Col 8 Line 27 and Col 11 Line 62- Col 12 Line 4).

Sonehara & Shimada are combinable because they are from the same field of endeavor, optical scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Shimada with Sonehara.

The suggestion/motivation for doing so would have been to correct image-scanning frequency, as taught by Shimada.

Therefore, it would have been obvious to combine Shimada with Sonehara to obtain the invention as specified.

Regarding claim 38, Shimada teaches The optical scanning module as claimed in claim 37, further comprising a detection part that detects a displacement of said movable mirror, wherein a frequency modulation section is set to start after a given period of time passes since a detection signal is obtained from said detection part; and a frequency causing said light-emission source to emit light is varied within the frequency modulation section (Col 8 Lines 19-27).

Considering claim 39, Shimada teaches The optical scanning module as claimed in claim 38, wherein a start timing of the frequency modulation section is varied based on the detection signal obtained from said detection part (Col 8 Lines 28-38).

Regarding claim 44, Sonehara teaches a detection part that detects a displacement of said movable mirror (Col 8 Lines 19-27); and Shimada teaches a variable output setting part that sets a frequency variation section so that the frequency

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variation section starts after a given period of time passes since a detection signal is obtained from said detection part, and varies a light-emission output of said light-emission source in accordance with the primary scanning position (Col 7 Lines 3-Col 8 Line 27).

For claim 60, which is representative of claims 71 and 81, Sonehara discloses an optical scanning module comprising: a plurality of optical scanning module arranged so that primary scanning direction thereof coincide with each other (may include typical scanning systems; Col 7 Lines 52-54); a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

Sonehara does not disclose expressly wherein a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning portion of each pixels.

Sonehara & Shimada are combinable because they are from the same field of endeavor, optical scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Shimada with Sonehara.

The suggestion/motivation for doing so would have been to correct image-scanning frequency, as taught by Shimada.

Therefore, it would have been obvious to combine Shimada with Sonehara to obtain the invention as specified above.

4. Claims 4-5,40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Ouchi et al (US Publication 2002/0191230).

Sonehara discloses an optical scanning module comprising: a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

Sonehara and Shimada do not disclose expressly wherein said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part.

Ouchi discloses wherein said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part (Paragraphs 0040,0059-0060).

Sonehara, Shimada & Ouchi are combinable because they are from the same field of endeavor, optical scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada with Ouchi.

The suggestion/motivation for doing so would have been to generate a driving force for the movable mirror, as taught by Ouchi.

Therefore, it would have been obvious to combine Sonehara and Shimada with Ouchi to obtain the invention as specified in claim 4.

For claim 5, Ouchi teaches The optical scanning module as claimed in claim 4, wherein said movable mirror driving part gradually increases the amplitude of said movable mirror until the predetermined detection signal value is obtained in said detection part in starting said movable mirror (Paragraph 0015).

For claim 41, Ouchi discloses wherein said movable mirror driving part gradually increases the amplitude of said movable mirror until the predetermined detection signal value is obtained in said detection part in starting said movable mirror (Paragraph 0015).

For claim 40, Ouchi teaches wherein said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part (Paragraphs 0040,0059-0060).

5. Claims 9,45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Plesko (US 5,596,442).

Sonehara and Shimada disclose an optical scanning module as described above

Sonehara and Shimada do not disclose expressly wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period.

Plesko discloses wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period (Fig 11; Col 7 Lines 46-53).

Sonehara, Shimada & Plesko are combinable because they are from the same field of endeavor, scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada with Plesko.

The suggestion/motivation for doing so would have been to produce patterns to eliminate the need for scanner reading equipment, as taught by Plesko.

Therefore, it would have been obvious to combine Sonehara and Shimada with Plesko to obtain the invention as specified in claim 9.

For claim 45, Plesko teaches wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period (Fig 11; Col 7 Lines 46-53).

6. Claims 10,46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) in view of Shimada et al (US 4,760,251) in view of Plesko (US 5,596,442) and further in view of Ouchi et al (US Publication 2002/0191230).

Sonehara, Shimada, and Plesko disclose an optical scanning module as described above

Sonehara, Shimada, and Plesko do not disclose expressly wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period.

Ouchi discloses wherein said movable mirror driving part gradually increases the amplitude of said movable mirror until the predetermined detection signal value is obtained in said detection part in starting said movable mirror (Paragraph 0015).

Sonehara, Shimada, Plesko, and Ouchi are combinable because they are from the same field of endeavor, scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada and Plesko with Ouchi.

The suggestion/motivation for doing so would have been to increase torque of the driving unit, as taught by Ouchi.

Therefore, it would have been obvious to combine Sonehara and Shimada and Plesko with Ouchi to obtain the invention as specified in claim 10.

For claim 46, Ouchi teaches wherein said movable mirror driving part gradually increases the amplitude of said movable mirror until the predetermined detection signal value is obtained in said detection part in starting said movable mirror (Paragraph 0015).

7. Claims 7,43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Ouchi et al (US Publication 2002/0191230) and further in view of Konno (US 5,767,955).

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Sonehara discloses an optical scanning module comprising: a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

Sonehara and Shimada and Ouchi do not disclose expressly wherein said movable mirror driving part varies an amplitude of said movable mirror so that a predetermined detection signal value may be obtained in said detection part.

Konno discloses The optical scanning module as claimed in claim 4, wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

Sonehara, Shimada, Ouchi, and Konno are combinable because they are from the same field of endeavor, optical scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada and Ouchi with Konno.

The suggestion/motivation for doing so would have been having the benefit of a measuring the reflection point, as taught by Konno.

Therefore, it would have been obvious to combine Sonehara and Shimada and Ouchi with Konno to obtain the invention as specified in claim 7.

For claim 43, Konno teaches wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented

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from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

8. Claims 11, 13-36,48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Plesko (US 5,596,442) and further in view of Konno (US 5,767,955).

Sonehara and Shimada and Plesko disclose an optical scanning module as described above

Sonehara and Shimada and Plesko do not disclose expressly wherein said movable mirror driving part reduces or stops a rotational oscillation force provided to said movable mirror at least in a period other than an image writing period.

Konno discloses The optical scanning module as claimed in claim 4, wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

Sonehara, Shimada, Plesko and Konno are combinable because they are from the same field of endeavor, scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada and Plesko with Konno.

The suggestion/motivation for doing so would have been having the benefit of a measuring the reflection point, as taught by Konno.

Therefore, it would have been obvious to combine Sonehara and Shimada and Plesko with Konno to obtain the invention as specified in claim 11.

For claim 48, Konno discloses wherein said movable mirror driving part stops driving said movable mirror if the predetermined detection signal value is prevented from being obtained in said detection part within a given time limit (Col 8 Line 66- Col 9 Line 12).

Claims 13-24 are representative of claims 1-12,40-43 and hence are rejected accordingly.

Claims 25-36 are representative of claims 1-12, 40-43 and 13-24, and hence are rejected accordingly.

9. Claims 49,51-⁴~~58~~,59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al (US 2001/0035460) in view of Sonehara et al (US 6,388,697) in view of Shimada et al (US 4,760,251).

Nakajima discloses an optical scanning device comprising: a plurality of optical scanning modules arranged so that primary scanning directions thereof coincide with each other (Paragraphs 0228-0232; Figs 12 and 14).

Nakajima does not disclose expressly the optical scanning modules each comprising: a light-emission source emitting a light beam; a movable mirror reflecting the light beam; and a movable mirror driving part that causes said movable mirror to oscillate in first and second opposite directions, wherein a frequency of pixel information supplied to said light-emission source varies in accordance with a primary scanning position of each of pixels.

Sonehara discloses a light-emission source emitting a light beam 406; a movable mirror reflecting the light beam 415; a movable mirror driving part that causes said

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movable mirror to oscillate in first and second opposite directions 404 (Fig 4; Col 6 Lines 41-61).

Shimada discloses wherein a frequency causing said light-emission source to emit light based on pixel information varies in accordance with a primary scanning position (Col 7 Lines 3-Col 8 Line 27).

Nakajima, Sonehara & Shimada are combinable because they are from the same field of endeavor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Shimada with Nakajima and Sonehara.

The suggestion/motivation for doing so would have been to correct image-scanning frequency, as taught by Shimada.

Therefore, it would have been obvious to combine Shimada with Nakajima and Sonehara to obtain the invention as specified in claim 49.

For claim 51, Nakajima discloses wherein the light beam emitted from said light-emission source of each of said optical scanning modules is caused to scan a region in the primary scanning direction by said movable mirror so that image recording is performed by connecting the regions scanned by the light beams of said optical scanning modules (Paragraphs 0228-0232; Figs 12 and 14).

Regarding claim 52, Shimada teaches further comprising a variable pixel frequency setting part that varies the pixel frequency modulating said light-emission source in accordance with an amount of oscillation of said movable mirror (Col 7 Line 3-Col 8 Line 27).

Considering claim 53, Nakajima discloses further comprising beam detection parts each detecting a position of the light beam deflected by said movable mirror, the beam detection parts being provided outside the scanned region at positions corresponding to scanning starting and termination ends of each of the optical scanning modules, respectively (Fig 14; Paragraphs 0228-0233). Shimada teaches wherein said variable pixel frequency based on a scanning period between detections of the light beam by the beam detection parts (Col 7 Line 3-Col 8 Line 27).

For claim 54, Shimada teaches wherein, said variable pixel frequency setting part varies the pixel frequency in a plurality of steps during one scan (Col 7 Line 3-Col 8 Line 27).

Regarding claim 55, Nakajima teaches a variable driving current setting part that varies, in accordance with the pixel frequency, a driving current supplied to said light-emission source so as to vary an amount of light emitted therefrom (paragraphs 0119-0124).

Regarding claim 56, Nakajima discloses The optical scanning device as claimed in claim 51, further comprising a beam detection part detecting a position of the light beam deflected by said movable mirror, the beam detection part being provided outside the scanned region at a position corresponding to a scanning starting end of each of the optical scanning modules, wherein, a reference signal for starting image writing is switched between detection signals output from the beam detection part based on timing of application of the driving voltages to said movable mirror driving part (Fig 14; Paragraphs 0228-0233).

For claim 57, Nakajima discloses further comprising a beam deflected by said movable mirror, the beam detection part being provided outside the scanned region of each of the optical scanning modules, wherein the light beam is turned within a region detectable by said beam detection part so as to perform scanning in the first and second opposite directions (Fig 14; Paragraphs 0228-0233).

Considering claim 58, Nakajima teaches wherein the optical scanning modules are arranged so that the scanned region of each adjacent two of the optical scanning modules are apart from each other by one scanning pitch in a secondary scanning direction; and timing phases of the driving voltages applied to the movable mirror driving parts of the optical scanning modules coincide substantially (Figs 12 and 14; Paragraphs 0228-0233).

For claim 59, Nakajima teaches The optical scanning device as claimed in claim 51, further comprising a pair of buffer parts alternating in temporarily storing the image data so that each of the buffer parts stores image data for every other scanning line, wherein the light beam emitted from said light-emission source is deflected by said movable mirror so as to scan the scanned region in the first and second opposite directions; and the image data is read out alternately from the paired buffer parts in first and second respective orders reverse to each other based on timing of the driving voltages applied to said movable mirror driving part (Paragraphs 0272-0273).

10. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al (US 2001/0035460) in view of Sonehara et al (US 6,388,697) in view of Shimada et al (US 4,760,251) and further in view of Bobba et al (US 5,007,691).

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Nakajima, Sonehara, Shimada discloses the optical scanning device as taught above.

Nakajima, Sonehara, Shimada does not disclose expressly wherein said light-emission source is modulated in accordance with image data; said movable mirror is supported by torsion bars provided to a support substrate so as to be oscillatable about the torsion bars as a rotary shaft; and said movable mirror driving part causes said movable mirror to oscillate by periodically generating attraction or a repulsive force between said support substrate and said movable mirror by switching voltages applied to said movable mirror driving part, said movable mirror driving part being- provided on both of end parts of said movable mirror, the end parts being positioned on opposite sides of each of the torsion bars.

Bobba discloses wherein said light-emission source is modulated in accordance with image data; said movable mirror is supported by torsion bars provided to a support substrate so as to be oscillatable about the torsion bars as a rotary shaft; and said movable mirror driving part causes said movable mirror to oscillate by periodically generating attraction or a repulsive force between said support substrate and said movable mirror by switching voltages applied to said movable mirror driving part, said movable mirror driving part being- provided on both of end parts of said movable mirror, the end parts being positioned on opposite sides of each of the torsion bars (Col 4 Lines 48-61).

Nakajima, Sonehara, Shimada & Bobba are combinable because they are from the same field of endeavor.

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Bobba with Nakajima, Sonehara, and Shimada.

The suggestion/motivation for doing so would have been to reduce power, as taught by Bobba.

Therefore, it would have been obvious to combine Bobba with Nakajima, Sonehara, and Shimada to obtain the invention as specified in claim 50.

11. Claims 61,72,82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Bobba et al (US 5,007,691).

For claim 61, which is representative of claims 72 and 82, Sonehara and Shimada disclose an optical scanning module as described above.

Sonehara and Shimada do not disclose expressly The optical scanning device as claimed in claim 60, wherein said light-emission source is modulated in accordance with image data; said movable mirror is supported by torsion bars provided to a support substrate so as to be oscillatable about the torsion bars as a rotary shaft; and said movable mirror driving part causes said movable mirror to oscillate by periodically generating attraction or a repulsive force between said support substrate and said movable mirror by switching voltages applied to said movable mirror driving part; said movable mirror driving part being- provided on both of end parts of said movable mirror, the end parts being positioned on opposite sides of each of the torsion bars.

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Bobba discloses wherein said light-emission source is modulated in accordance with image data; said movable mirror is supported by torsion bars provided to a support substrate so as to be oscillatable about the torsion bars as a rotary shaft; and said movable mirror driving part causes said movable mirror to oscillate by periodically generating attraction or a repulsive force between said support substrate and said movable mirror by switching voltages applied to said movable mirror driving part, said movable mirror driving part being- provided on both of end parts of said movable mirror, the end parts being positioned on opposite sides of each of the torsion bars (Col 4 Lines 48-61).

Sonehara, Shimada & Bobba are combinable because they are from the same field of endeavor, scanners.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Sonehara and Shimada with Bobba.

The suggestion/motivation for doing so would have been to reduce power, as taught by Bobba.

Therefore, it would have been obvious to combine Sonehara and Shimada with Bobba to obtain the invention as specified.

12. Claim 62-66,68-70, 73-76, 80,83-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sonehara et al (US 6,388,697) and Shimada et al (US 4,760,251) and further in view of Bobba et al (US 5,007,691) and further in view of Nakajima et al (US Publication 2001/0035460 A1).

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For claim 62, which is representative of claims 73 and 83, Sonehara, Shimada, Bobba disclose an optical scanning module as discussed above.

Sonehara, Shimada, Bobba do not disclose expressly wherein the light beam emitted from said light-emission source of each of said optical scanning modules is caused to scan a region in the primary scanning direction by said movable mirror so that image recording is performed by connecting the regions scanned by the light beams of said optical scanning modules.

Nakajima discloses wherein the light beam emitted from said light-emission source of each of said optical scanning modules is caused to scan a region in the primary scanning direction by said movable mirror so that image recording is performed by connecting the regions scanned by the light beams of said optical scanning modules (Paragraphs 0228-0232; Figs 12 and 14).

Sonehara, Shimada, Bobba & Nakajima are combinable because they are from the same field of endeavor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Nakajima with Sonehara, Shimada, and Bobba.

The suggestion/motivation for doing so would have been to cause light beams to reciprocate in an array, as taught by Nakajima.

Therefore, it would have been obvious to combine Nakajima with Sonehara, Shimada, and Bobba to obtain the invention as specified in claim 12.

Regarding claim 63, which is representative of claim 84, Shimada teaches further comprising a variable pixel frequency setting part that varies the pixel frequency

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modulating said light-emission source in accordance with an amount of oscillation of said movable mirror (Col 7 Line 3- Col 8 Line 27).

For claim 64, which is representative of claims 74 and 85, Nakajima discloses further comprising beam detection parts each detecting a position of the light beam deflected by said movable mirror, the beam detection parts being provided outside the scanned region at positions corresponding to scanning starting and termination ends of each of the optical scanning modules, respectively (Fig 14; Paragraphs 0228-0233). Shimada teaches wherein said variable pixel frequency based on a scanning period between detections of the light beam by the beam detection parts (Col 7 Line 3-Col 8 Line 27).

For claim 65, which is representative of claims 75 and 86, Shimada teaches wherein, said variable pixel frequency setting part varies the pixel frequency in a plurality of steps during one scan (Col 7 Line 3-Col 8 Line 27).

Regarding claim 66, which is representative of claims 76 and 87, Nakajima teaches a variable driving current setting part that varies, in accordance with the pixel frequency, a driving current supplied to said light-emission source so as to vary an amount of light emitted therefrom (paragraphs 0119-0124).

Considering claim 68, which is representative of claims 78 and 89, Nakajima discloses further comprising a beam deflected by said movable mirror, the beam detection part being provided outside the scanned region of each of the optical scanning modules, wherein the light beam is turned within a region detectable by said beam

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detection part so as to perform scanning in the first and second opposite directions (Fig 14; Paragraphs 0228-0233).

Regarding claim 69, which is representative of claims 79 and 88 and 90, Nakajima teaches wherein the optical scanning modules are arranged so that the scanned region of each adjacent two of the optical scanning modules are apart from each other by one scanning pitch in a secondary scanning direction; and timing phases of the driving voltages applied to the movable mirror driving parts of the optical scanning modules coincide substantially (Figs 12 and 14; Paragraphs 0228-0233).

Regarding claim 70, which is representative of claim 80, Nakajima teaches further comprising a pair of buffer parts alternating in temporarily storing the image data so that each of the buffer parts stores image data for every other scanning line, wherein the light beam emitted from said light-emission source is deflected by said movable mirror so as to scan the scanned region in the first and second opposite directions; and the image data is read out alternately from the paired buffer parts in first and second respective orders reverse to each other based on timing of the driving voltages applied to said movable mirror driving part (Paragraphs 0272-0273).

Claim Rejections - 35 USC § 112

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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14. Claims 6,11,42,47,67,77 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has not clearly shown how the light-emission source inhibits image writing before a predetermined signal values claimed in 6 nor a reference signal for starting image writing is switched, as taught in Claim 67. See applicant's specification, pages 62-65.

Specification

15. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

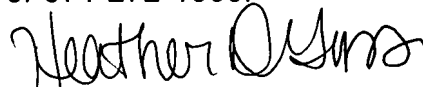
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather D. Gibbs whose telephone number is 571-272-7404. The examiner can normally be reached on M-Thu 8AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung S. Moe can be reached on 571-272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

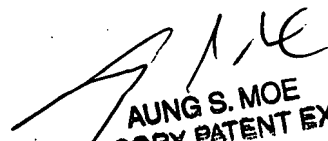
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Heather D Gibbs
Examiner
Art Unit 2625

hdg



AUNG S. MOE
SUPERVISORY PATENT EXAMINER
3/19/07